

Problem Solving Methodology

Problem Step	Tools and Techniques
Step 1: Select the Problem A. Agree on selection criteria B. Review background, drivers C. Write problem statement	Brainstorming, Selection Matrix/Decision Matrix Affinity Diagram, Cost of Quality, Criticality Analysis, Interrelationship Digraph, Pairwise Ranking, Radar Chart/Spider Chart, Voice of the Customer Gap Analysis
Step 2: Describe the Current Situation A. Collect baseline data B. Describe process C. Confirm/modify problem statement D. Set improvement targets	Affinity Diagram, Bar Chart, Control Chart, Histogram, Stratification/Progressive Analysis, Voice of the Customer Flowchart, Pareto Analysis Gap Analysis Benchmarking/Competitive Analysis, Histogram, Pareto Analysis, Radar Chart/Spider Chart
Step 3: Choose the Most Likely Cause A. Conduct root-cause analysis B. Prioritize root causes C. Conduct cost/benefit analysis	Box Plot, Cause and Effect Diagram/Fishbone, Stratification/Progressive Analysis Pairwise Ranking, Pareto Analysis, Prioritization Matrix Cost Matrix, Spreadsheet, Value Analysis

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Step 4: Develop Solution/Action Plan A. Identify solutions B. Map solutions to root causes C. Conduct cost/benefit analysis D. Assess barriers to implementation E. Identify countermeasures to barriers F. Write action plan	Benchmarking/Competitive Analysis, Carry-Over Analysis, Criticality Analysis, Selection Matrix/Decision Matrix Tree Diagram Pairwise Ranking Cost Matrix, Failure Mode Analysis, Spreadsheet, Value Analysis Barriers and Aids Chart/Force Field Analysis Brainstorming, Fault Tree Analysis Gantt Chart/Action Plan, PERT Chart, Planning Matrix, Planning Network
Step 5: Implement the Solution/Action Plan A. Test pilot B. Evaluate test results C. Revise action plan D. Implement and monitor E. Summarize results	Checksheet, Control Chart, Line Chart/Run Chart Histogram, Pie Chart, Scatter Diagram Gantt Chart/Action Plan, PERT Chart, Planning Matrix, Planning Network, Work Breakdown Structure Checksheet, Control Chart, Line Chart/Run Chart Histogram, Pie Chart, Scatter Diagram

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Step 6: Review and Evaluate Results A. Did the solution work? B. Was the action plan completed? C. Was the best solution selected? D. Was the correct cause selected?	Line Chart/Run Chart Gantt Chart/Action Plan, PERT Chart, Planning Matrix, Planning Network Prioritization Matrix Cause and Effect Diagram
Step 7: Reflect and Act on Learning	Lessons Learned, Plan, Do, Check, Act (PDCA), Planning Matrix, Planning Network